

## REMARKS

Claims 37-38, 43-44, and 46-50 are pending in the application. Claims 37, 43-44, and 46-50 are currently amended. Claims 29-36, 39 are currently cancelled. Claims 1-28, and 40-42 have been previously cancelled.

Claim 37 has been amended to incorporate the limitation previously recited in Claim 39. As amended, claim 37 now recites the specific compositions and/or ratios of the amino acids that constitute the polypeptide encoded by the nucleic acid polymer. Claim 43 has been amended to recite the step of feed analysis to determine the nutritional needs of the animal and the steps of expressing and mixing the polypeptide with a conventional feed. Support for the mixing step can be found on page 6 of the specification as original filed. The steps of determining the animal's nutritional needs and expression of polypeptide can be found on pages 4-5 of the specification.

Claims 44, 46-50 have been rewritten so that they no longer depend from Claim 29. No new matter has been introduced by the amendments.

### **I. Claim Rejections--35 U.S.C. §102**

(1) Claims 29-30, 32-34, 36, 27 (*sic*) and 43 stand rejected under 35 U.S.C. §102(b) as being anticipated by Barr et al., J. Exp. Med. 165:1160-71, (1987) ("Barr" hereinafter). Claims 29-30, 32-34, and 36 have been cancelled. Claim 27 had been previously cancelled, Applicant assumes that the Examiner means 37 (please confirm). Claim 37 has been amended to recite the ratio of amino acid residues in the polypeptide which is not taught by Barr. Claim 43 has been amended to recite the step of feed analysis to determine the nutritional needs of an animal fed on conventional feed and the steps of expressing and mixing the polypeptide with a conventional feed. Barr never teaches or suggests feed analysis to determine the nutritional needs of an animal fed on conventional feed. Nor has Barr contemplated mixing the polypeptide expressed in the yeast with the conventional feed to supplement the animal's nutritional needs. Thus, because not all limitations of the amended claims 37 and 43 are taught by Barr, withdrawal of the §102(b) rejection of these two claims is respectfully requested.

(2) Claims 29-30, 32-34, 36-37 and 43 stand rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 4,826,957 issued to Nussenzweig et al. (“Nussenzweig” hereinafter), as evidenced by Barr. Claims 29-30, 32-34, and 36 have been cancelled. As explained above, Claims 37 and 43 have been amended to include additional limitations. Nussenzweig merely teaches the expression of an exogenous protein in yeast, nothing was mentioned with regard to the specific ratio of amino acids in the polypeptide or the steps of determining the nutritional needs of the an animal and mixing the expressed polypeptide with a conventional feed as recited in amended claims 37 and 43, respectively. Thus, because not all limitations of the rejected claims 37 and 43 have been taught or suggested by the cited reference, withdrawal of the §102(b) rejection of these two claims is respectfully requested.

(3) Claims 29-32, 34, 36-37, and 43 stand rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,337,193 issued to Tully et al. (“Tully” hereinafter). Claims 29-32, 34, and 36 have been cancelled, and Claims 37 and 43 have been amended to include additional limitations. Tully does not disclose the claim limitations with regard to the specific composition of amino acids in the polypeptide as recited by amended claim 37. Nor does Tully disclose the steps of determining the nutritional needs of the an animal and mixing the expressed polypeptide with a conventional feed as recited in amended claim 43. Withdrawal of the §102(e) rejections of claims 37 and 43 is respectfully requested.

(4) Claims 29-37, 39 and 43 stand rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 5,985,605 issued to Cheng et al. (“Cheng” hereinafter). Claims 29-36, and 39 have been cancelled. Claim 37 has been amended to recite the ratio of amino acid residues in the polypeptide. Claim 43 has been amended to recite the steps of determining the nutritional needs of the an animal and mixing the expressed polypeptide with a conventional feed. Cheng has not disclosed the specific ratio of amino acids recited in Claim 37. Nor does Cheng disclose the step of ascertaining the nutritional needs of an animal by a feed analysis to determine the amino acid deficiency of the animal fed with a conventional feed or the step of mixing the polypeptide expressed in yeast with a conventional feed. Thus, because not all limitations are taught or suggested by Cheng, withdrawal of the section 102(e) rejections of claims 37 and 43 over Cheng is respectfully requested.

(5) Claims 29-37, 39 and 43 stand rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,451,572 issued to Lei et al. (“Lei” hereinafter) and Dassa et al., J. Bacteriol., 172(9): 5497-5500 (1990) (“Dassa” hereinafter). Claims 29-36, and 39 have been cancelled. Claim 37 has been amended to recite specific ratio of amino acid residues in the polypeptide. Claim 43 has been amended to recite the steps of determining the nutritional needs of the an animal and mixing the expressed polypeptide with a conventional feed. None of these new limitations are disclosed by Lei or Dassa. For this reason, Applicant respectfully submits that Lei and Dassa do not anticipate claims 37 and 43 as currently amended. Withdrawal of the rejection is respectfully requested.

## **II. Claim Rejections--35 U.S.C. §103**

(1) Claims 29-39 and 43 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Lei as evidenced by Dassa in view of Sikorski et al., Genetics 122: 19-27 (1989) (“Sikorski” hereinafter). Claims 29-36, and 39 have been cancelled. Claim 37 has been amended to recite specific ratio of amino acid residues in the polypeptide. Claim 43 has been amended to recite the steps of determining the nutritional needs of the an animal and mixing the expressed polypeptide with a conventional feed. Claim 38 depends from Claim 37 and necessarily incorporate all the limitations of Claim 37. As explained in Section I (5) above, none of these new limitations are disclosed by Lei or Dassa. Sikorski merely adds the disclosure of the pRS316 vector. The Examiner has not shown why one of ordinary skill in the art would find it obvious to prepare a construct with a polynucleotide encoding a polypeptide that has a specific ratio of amino acids as now claimed by Applicant. Nor has the Examiner established the reasons why it would be obvious to practice the method of Claim 43 by first ascertaining the nutritional needs of an animal on a particular diet and expressing the polypeptide in yeast for mixing with a conventional feed in order to supplement the nutritional needs of the animal. Withdrawal of the obviousness rejection is respectfully requested.

(2) Claim 45 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Chambon (US Patent No. 5,817,503)(“ Chambon” hereinafter) in view of Meade et al., J. Animal Sci., 1965 24:626-32. Claim 45 has been cancelled.

(3) Claims 47 and 48 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Chambon in view of Katz et al., J. Animal Sci., 41:1355-61 (1975) (“Katz” hereinafter). Applicant respectfully disagrees. Claim 47 recites the limitation wherein the polypeptide comprises the following amino acid units: lysine, arginine, histidine, tryptophan, isoleucine, leucine, valine, phenylalanine/tyrosine, methionine/cysteine, threonine, proline, and glycine/serine, in a ratio of 100 : 105: 37: 16: 67 : 111: 77: 105: 72: 67 : 33 : 67, wherein methionine/cysteine may be either methionine or cysteine with methionine constituting at least 50% of the sulfur-containing amino acids in the polypeptide, and phenylalanine/tyrosine may be either phenylalanine or tyrosine with phenylalanine constituting at least 50% of the aromatic amino acids in the polypeptide, and glycine/serine may be either glycine or serine. Claim 48 recites the limitation wherein the polypeptide comprises the following amino acid units: lysine, arginine, histidine, tryptophan, isoleucine, leucine, valine, phenylalanine/tyrosine, methionine/cysteine, threonine, proline, and glycine/serine, in a ratio of 100 : 105: 37: 17: 67 : 111: 77: 105: 75 : 73: 20 : 50, wherein methionine/cysteine may be either methionine or cysteine with methionine constituting at least 50% of the sulfur-containing amino acids in the polypeptide, and phenylalanine/tyrosine may be either phenylalanine or tyrosine with phenylalanine constituting at least 50% of the aromatic amino acids in the polypeptide, and glycine/serine may be either glycine or serine.

The Examiner acknowledges that Chambon does not teach the specific ratio of amino acids as claimed by Applicant. However, the Examiner is of the position that “Katz et al. disclose the ratios of amino acids appropriate for a diet for broiler chicks in two age categories, which is identical to the above stated ratios.” (emphasis added) Lines 7-8, page 15 of the Office Action dated 9/11/08. The Examiner further states that “Katz et al. disclose the usefulness of proteins comprising the ratios appropriate for growth of broiler chicks.” Lines 11-12, page 15 of the Office Action dated 9/11/08. Applicant respectfully disagrees. First, contrary to statements made by the Examiner, Katz never contemplates a polypeptide containing amino acids at a particular ratio. Katz merely discloses a mixture of amino acids as diet supplements. The amino acids of Katz do not exist in a form of a polypeptide. The only place in Katz where the ratio of different amino acids comes close to Applicant’s claimed ratios recited in Claims 47 and 48 is on page 1356, Table 1. According to

Applicant's own calculation, the ratio between lysine, arginine, histidine, tryptophan, isoleucine, leucine, valine, phenylalanine/tyrosine, methionine/cysteine, threonine, proline, and glycine/serine, is approximately 100:100:36:13:53:88:61:83:62:48:35:53. This is not identical to the ratios of 100 : 105: 37: 16: 67 : 111: 77: 105: 72: 67 : 33 : 67 or 100 : 105: 37: 17: 67 : 111: 77: 105: 75 : 73: 20 : 50 as recited in Claims 47 and 48, respectively. The Examiner has not shown why it would be obvious to modify the ratio of Katz in order to arrive at the ratios now claimed by Applicant. Withdrawal of the obviousness rejections of claims 47-48 is respectfully requested.

Applicant has addressed all issues raised in the last Office Action and believes that the amendments presented herein should place the pending claims in a condition for allowance. The Examiner is encouraged to call the undersigned attorney if a telephone discussion can advance the prosecution of the instant case. This Response is being submitted along with fees for 2-month extension of time. Applicant believes no other fees are due at this time; however, the Commissioner is authorized to charge Deposit Account No. 12-0600 if any fees are required for this filing.

Respectfully submitted:

Date: 2/11/09



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